FIG. 1

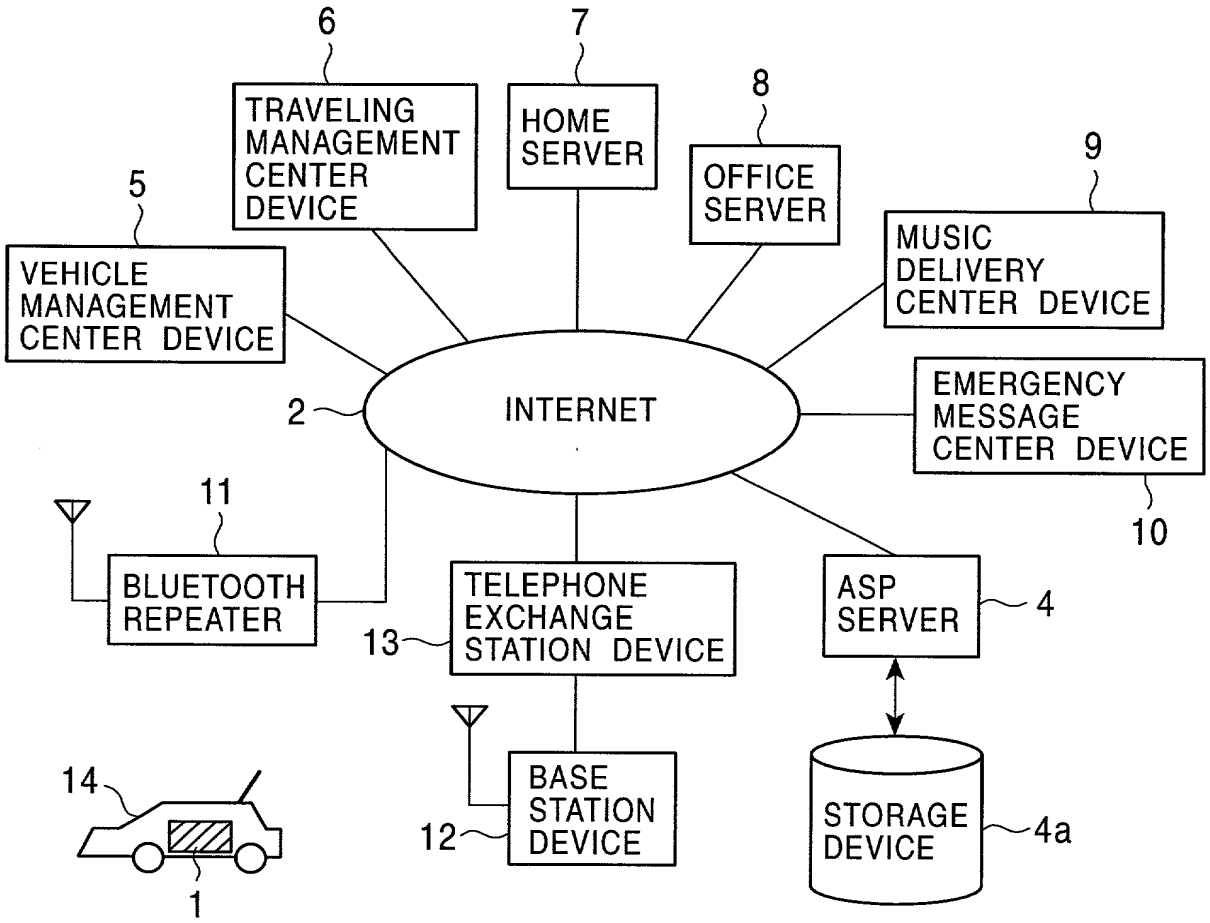

6
TRAVELING MANAGEMENT CENTER DEVICE
7
HOME SERVER
8
OFFICE SERVER
9
MUSIC DELIVERY CENTER DEVICE
5
VEHICLE MANAGEMENT CENTER DEVICE
2
INTERNET
EMERGENCY MESSAGE CENTER DEVICE
10
11
BLUETOOTH REPEATER
TELEPHONE EXCHANGE STATION DEVICE
13
ASP SERVER
4
14
BASE STATION DEVICE
12
STORAGE DEVICE
4a
1

FIG. 2

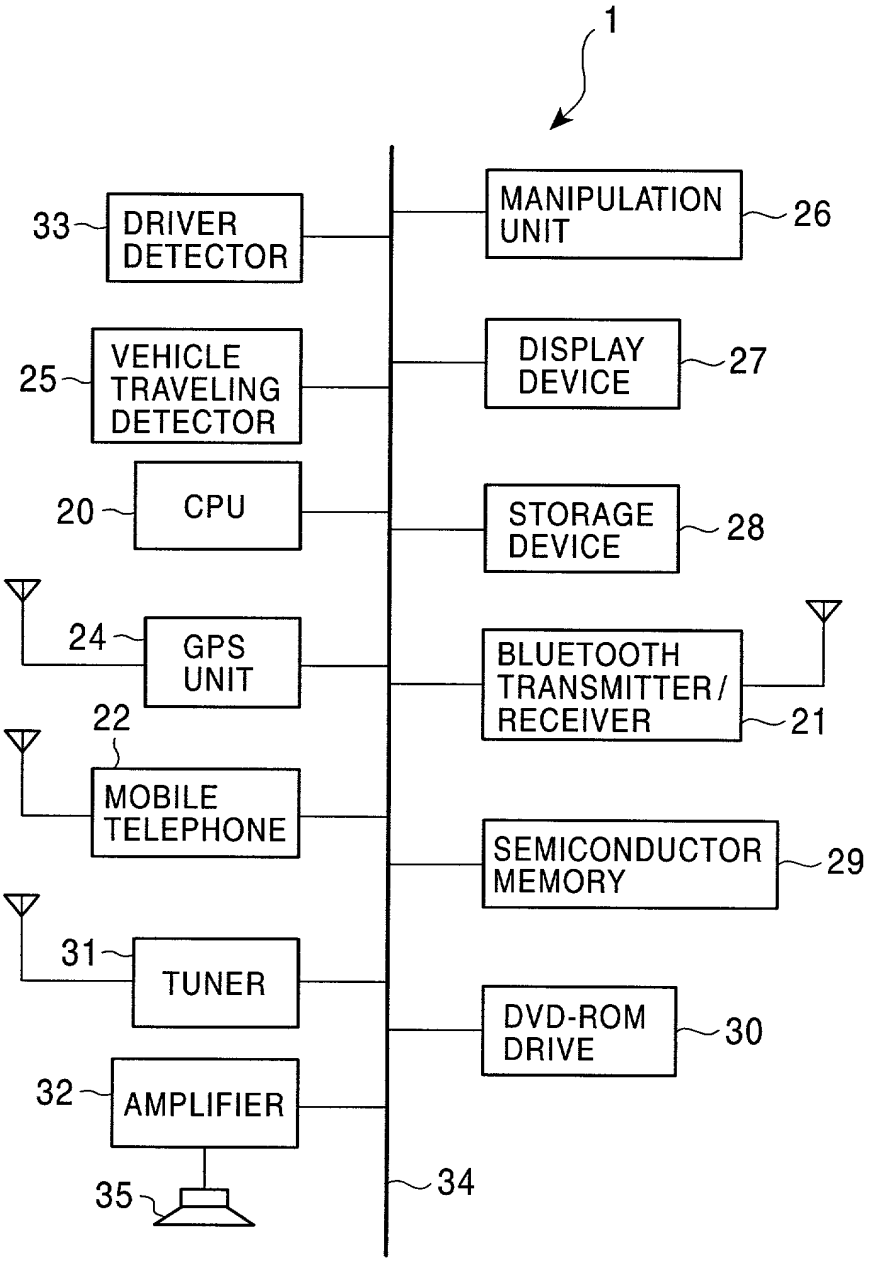

1
33
DRIVER DETECTOR
25
VEHICLE TRAVELING DETECTOR
20
CPU
24
GPS UNIT
22
MOBILE TELEPHONE
31
TUNER
32
AMPLIFIER
35
34
MANIPULATION UNIT
26
DISPLAY DEVICE
27
STORAGE DEVICE
28
BLUETOOTH TRANSMITTER/ RECEIVER
21
SEMICONDUCTOR MEMORY
29
DVD-ROM DRIVE
30

FIG. 3

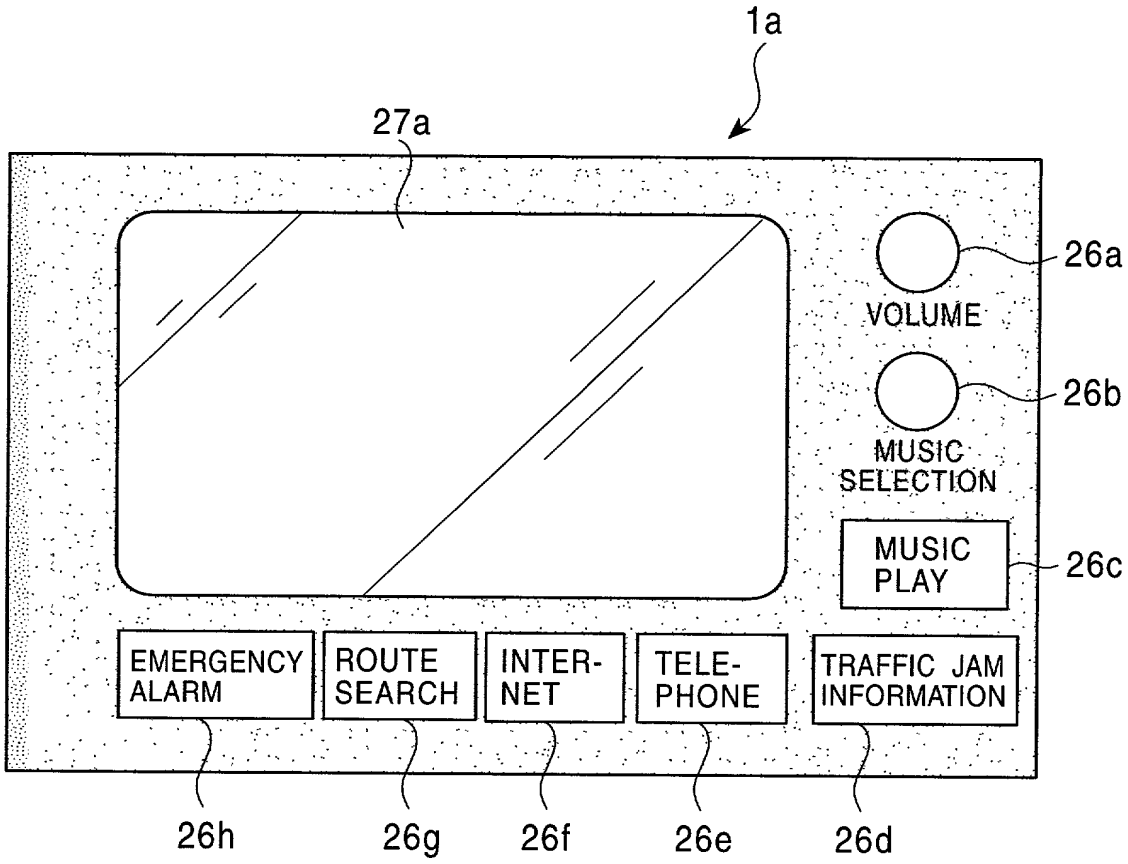

1a
27a
26a
VOLUME
26b
MUSIC SELECTION
MUSIC PLAY
26c
EMERGENCY ALARM
ROUTE SEARCH
INTER-NET
TELE-PHONE
TRAFFIC JAM INFORMATION
26h
26g
26f
26e
26d

FIG. 4A

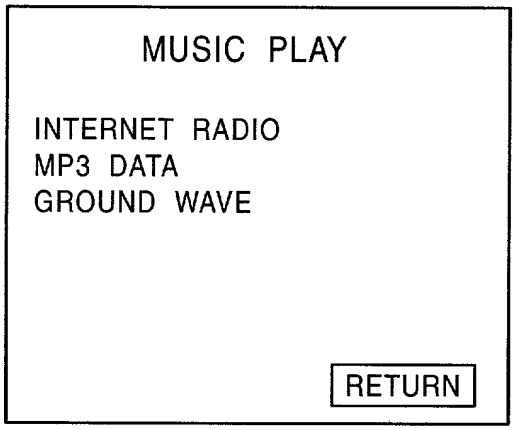


FIG. 4B

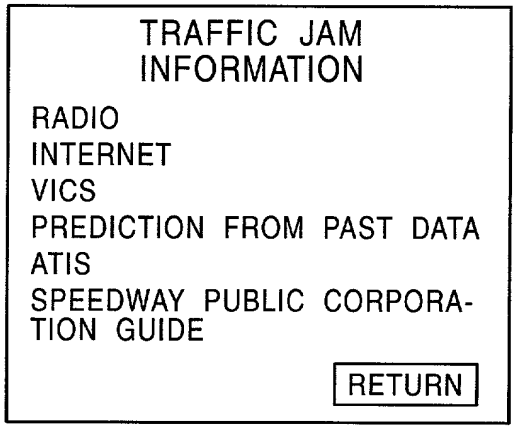


FIG. 4C

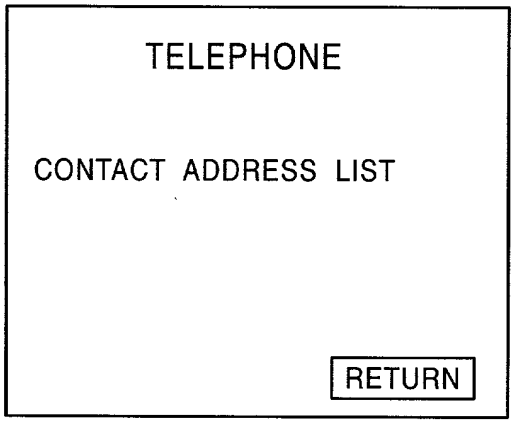


FIG. 4D

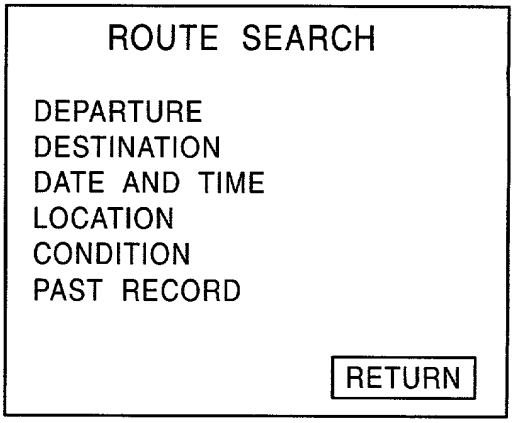


FIG. 4E

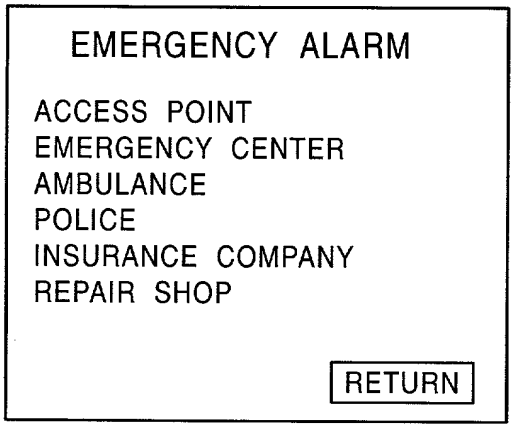


FIG. 5A

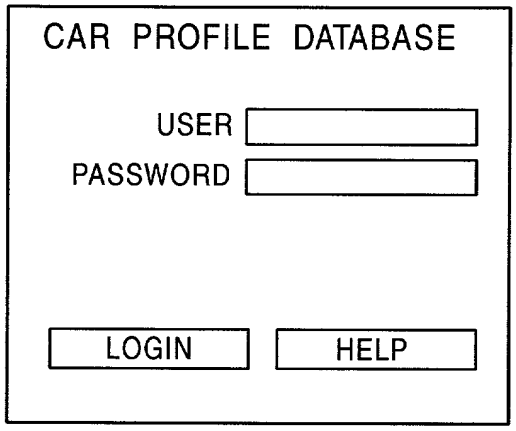


FIG. 5B

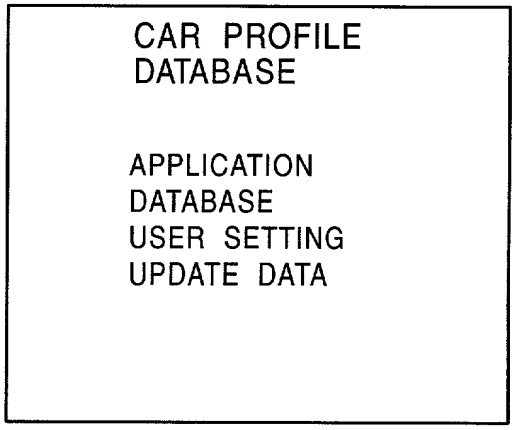


FIG. 5C

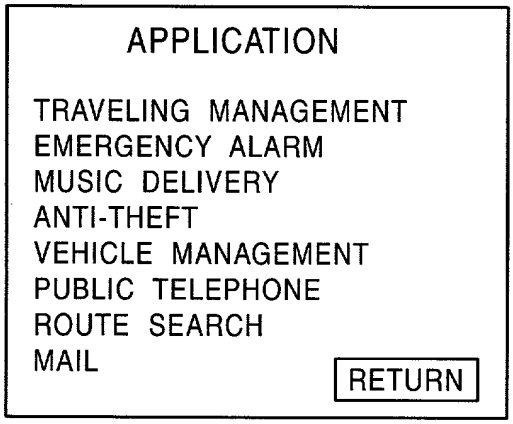


FIG. 5D

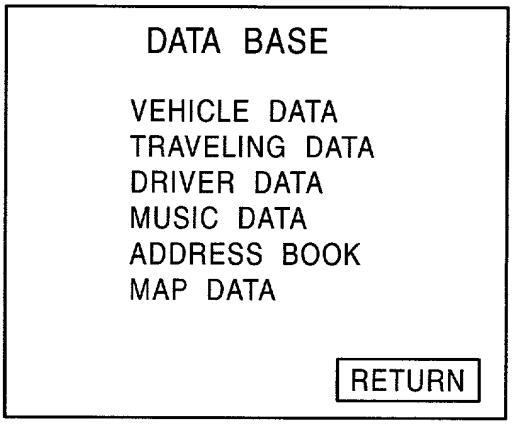


FIG. 5E

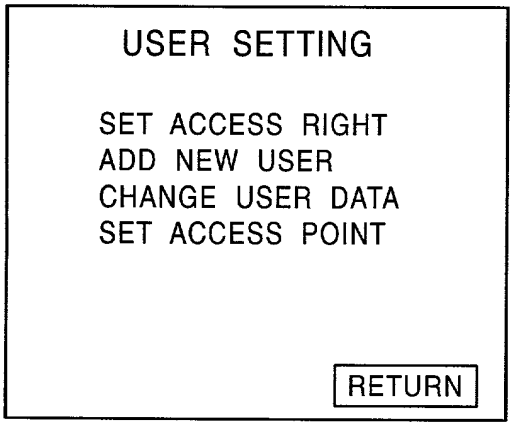
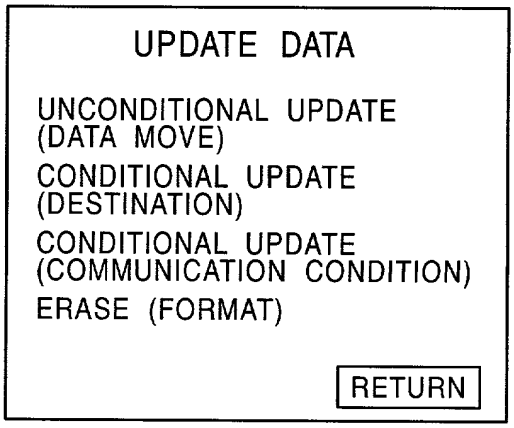


FIG. 5F



09961282 - 092501

FIG. 6A

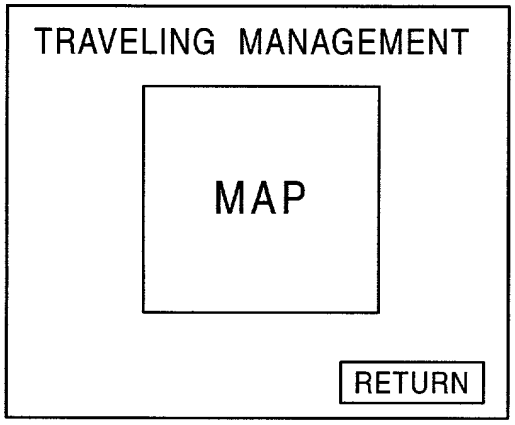


FIG. 6B

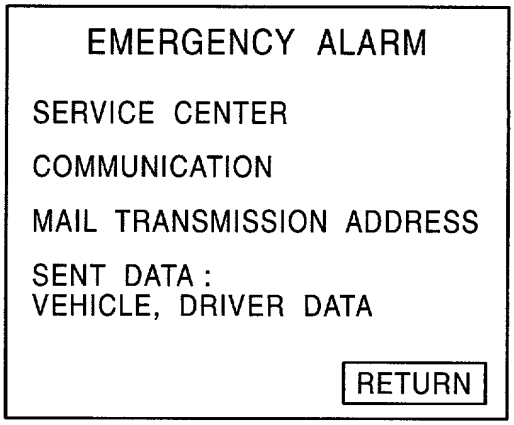


FIG. 6C

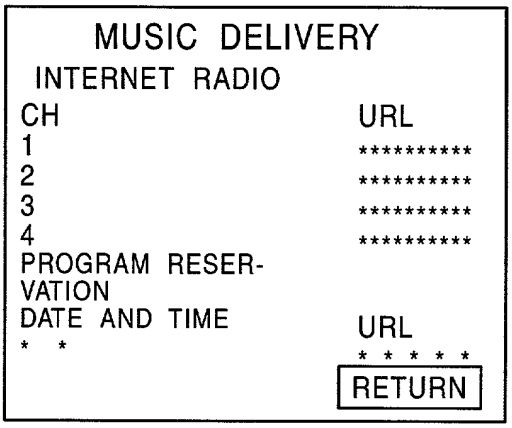
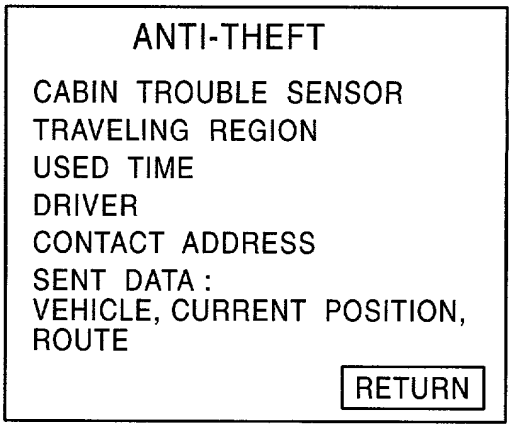


FIG. 6D



PTO-1595 (Rev. 10-95)

FIG. 6E

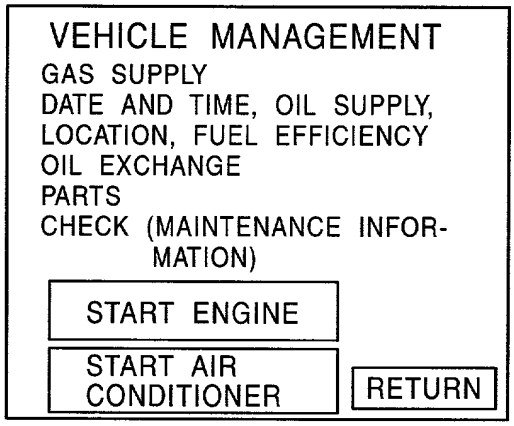


FIG. 6F

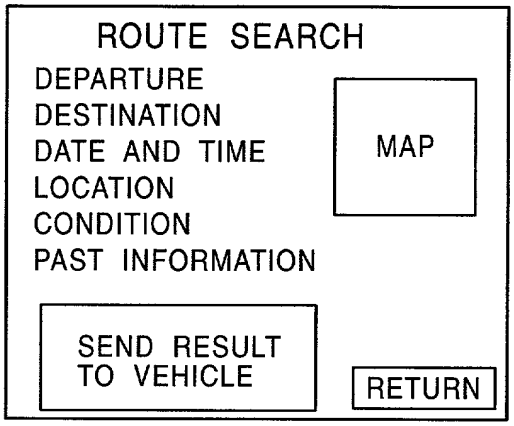


FIG. 6G

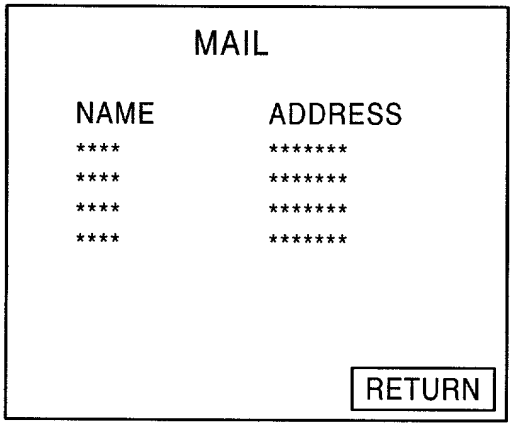
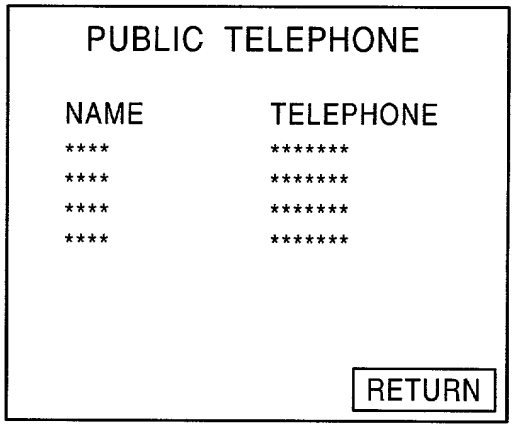


FIG. 6H



09961282 - 092504

FIG. 7A

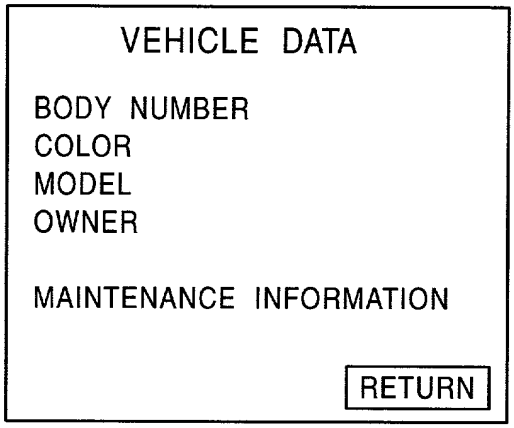


FIG. 7B

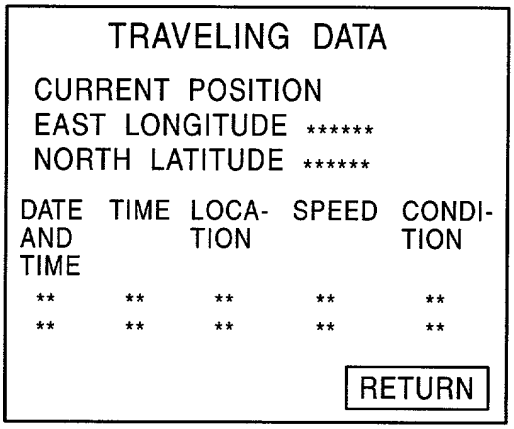


FIG. 7C

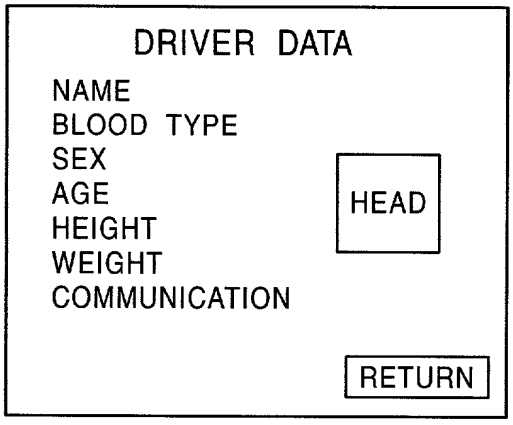


FIG. 7D

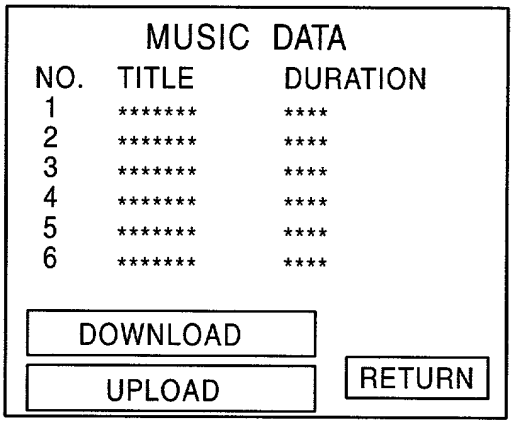


FIG. 7E

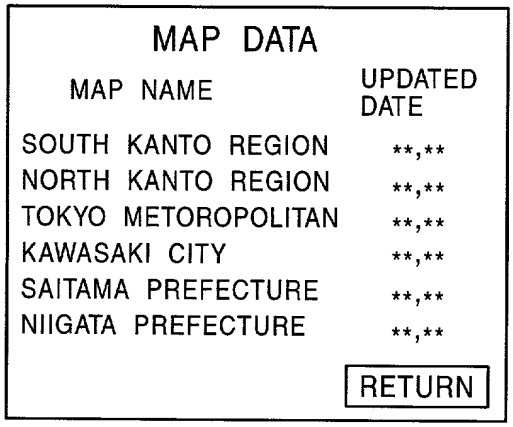
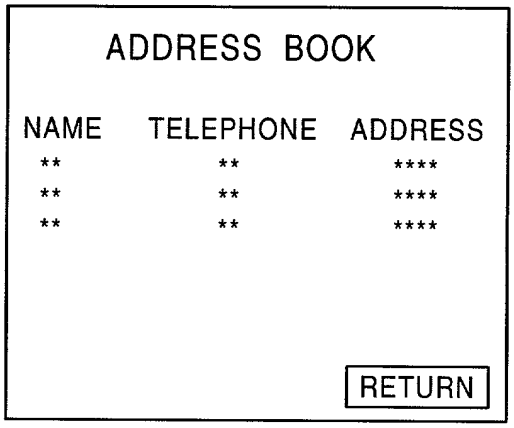


FIG. 7F



09961282 - 092501

FIG. 8

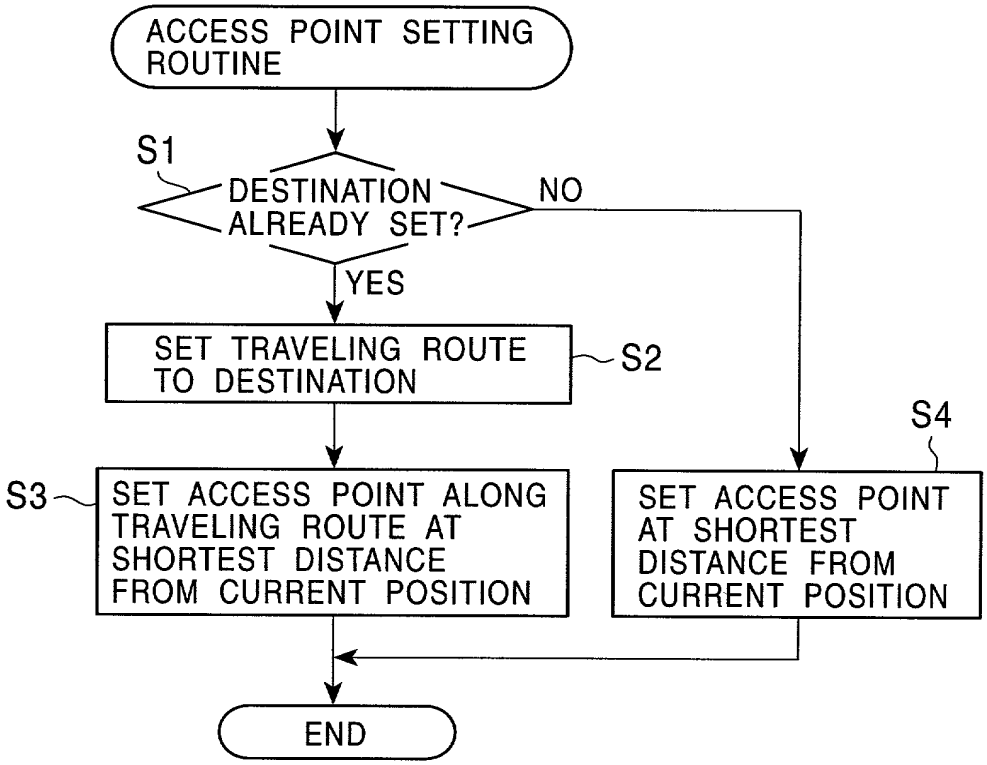
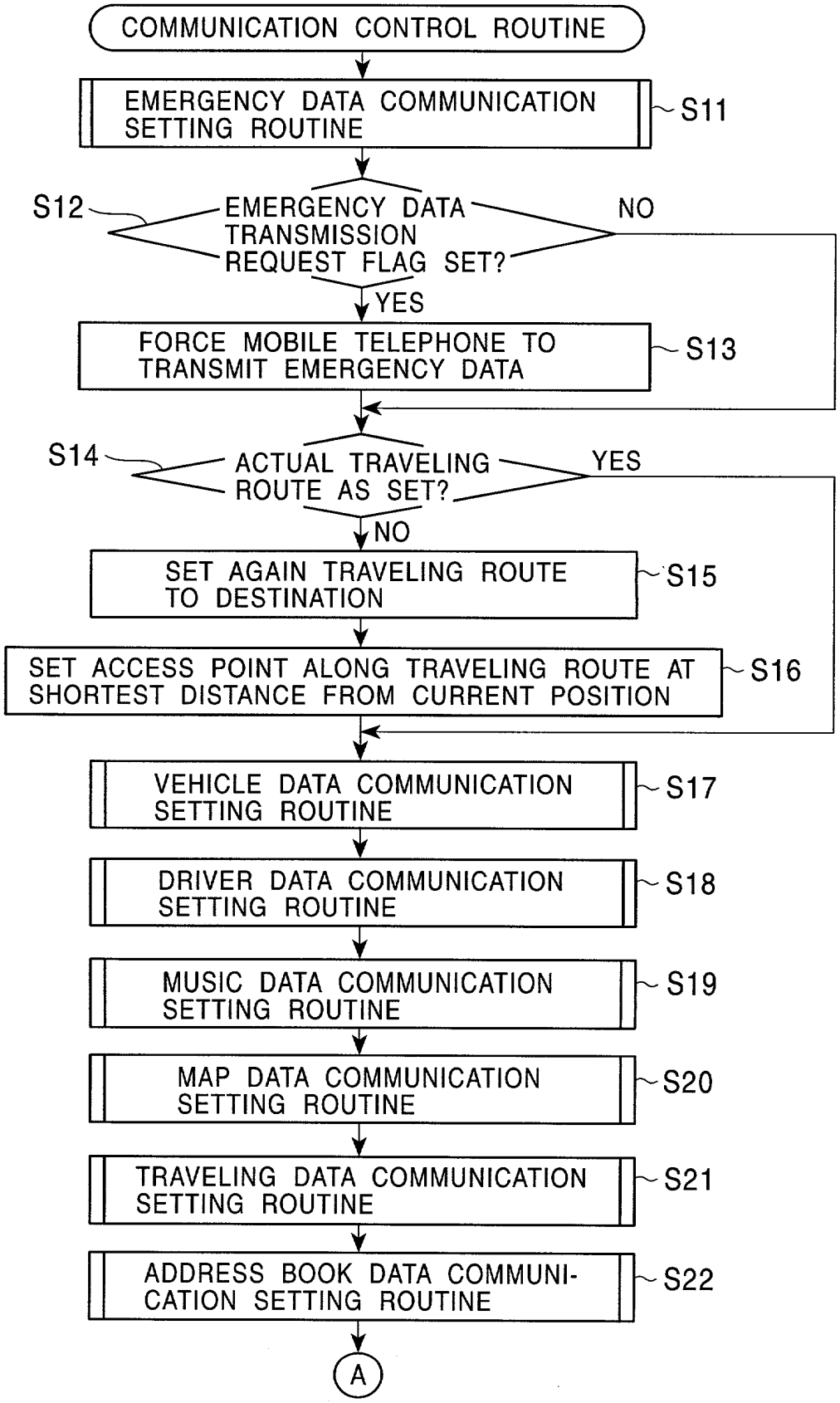

ACCESS POINT SETTING ROUTINE
S1
DESTINATION ALREADY SET?
NO
YES
SET TRAVELING ROUTE TO DESTINATION
S2
S3
SET ACCESS POINT ALONG TRAVELING ROUTE AT SHORTEST DISTANCE FROM CURRENT POSITION
S4
SET ACCESS POINT AT SHORTEST DISTANCE FROM CURRENT POSITION
END

FIG. 9



Q66381 - 10/26

FIG. 10

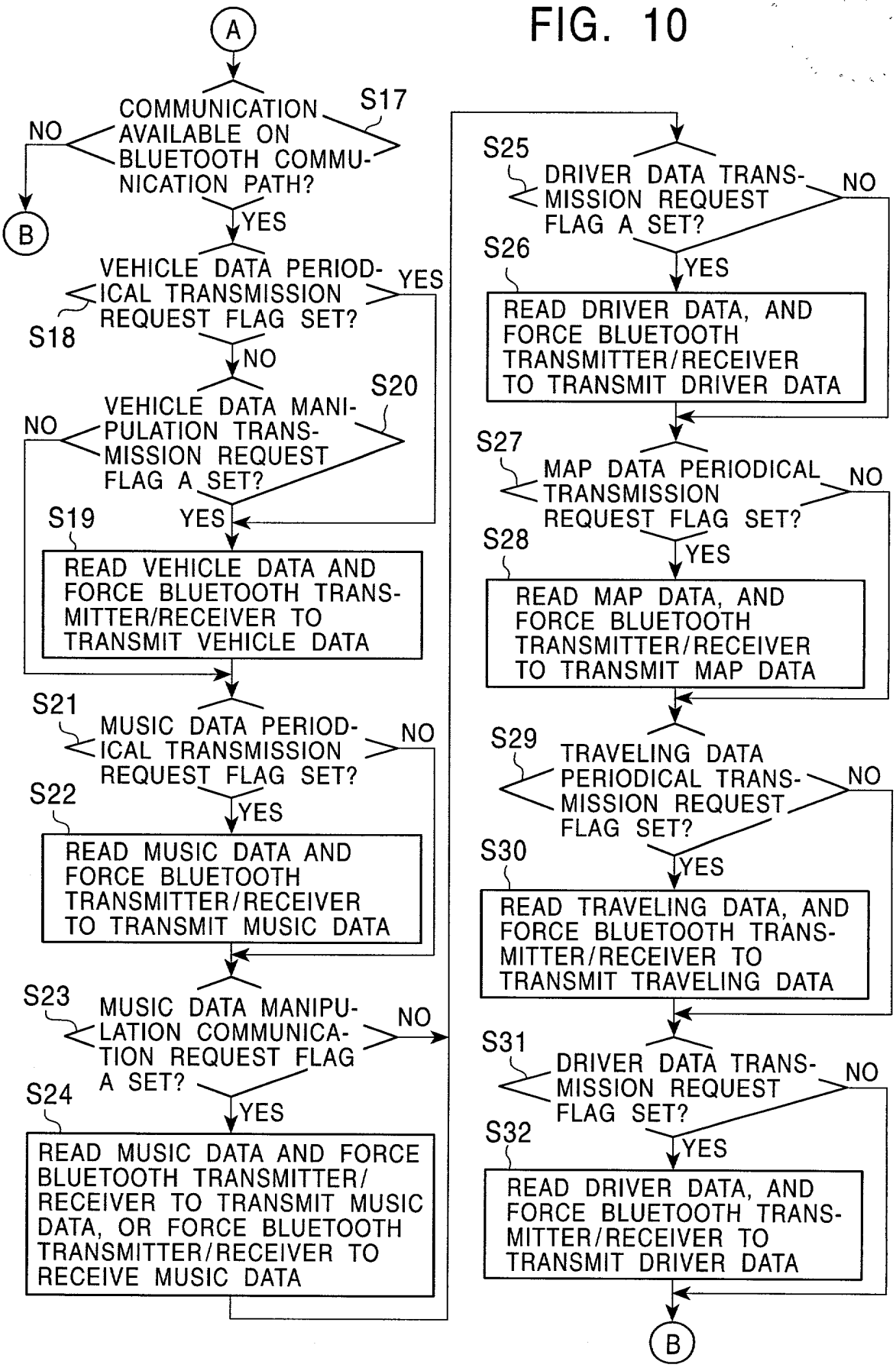

A
COMMUNICATION AVAILABLE ON BLUETOOTH COMMUNICATION PATH?
S17
NO
YES
B
VEHICLE DATA PERIODICAL TRANSMISSION REQUEST FLAG SET?
S18
YES
NO
VEHICLE DATA MANIPULATION TRANSMISSION REQUEST FLAG A SET?
S20
NO
YES
S19
READ VEHICLE DATA AND FORCE BLUETOOTH TRANSMITTER/RECEIVER TO TRANSMIT VEHICLE DATA
MUSIC DATA PERIODICAL TRANSMISSION REQUEST FLAG SET?
S21
NO
YES
S22
READ MUSIC DATA AND FORCE BLUETOOTH TRANSMITTER/RECEIVER TO TRANSMIT MUSIC DATA
MUSIC DATA MANIPULATION COMMUNICATION REQUEST FLAG A SET?
S23
NO
YES
S24
READ MUSIC DATA AND FORCE BLUETOOTH TRANSMITTER/RECEIVER TO TRANSMIT MUSIC DATA, OR FORCE BLUETOOTH TRANSMITTER/RECEIVER TO RECEIVE MUSIC DATA
DRIVER DATA TRANSMISSION REQUEST FLAG A SET?
S25
NO
YES
S26
READ DRIVER DATA, AND FORCE BLUETOOTH TRANSMITTER/RECEIVER TO TRANSMIT DRIVER DATA
MAP DATA PERIODICAL TRANSMISSION REQUEST FLAG SET?
S27
NO
YES
S28
READ MAP DATA, AND FORCE BLUETOOTH TRANSMITTER/RECEIVER TO TRANSMIT MAP DATA
TRAVELING DATA PERIODICAL TRANSMISSION REQUEST FLAG SET?
S29
NO
YES
S30
READ TRAVELING DATA, AND FORCE BLUETOOTH TRANSMITTER/RECEIVER TO TRANSMIT TRAVELING DATA
DRIVER DATA TRANSMISSION REQUEST FLAG SET?
S31
NO
YES
S32
READ DRIVER DATA, AND FORCE BLUETOOTH TRANSMITTER/RECEIVER TO TRANSMIT DRIVER DATA
B

FIG. 11

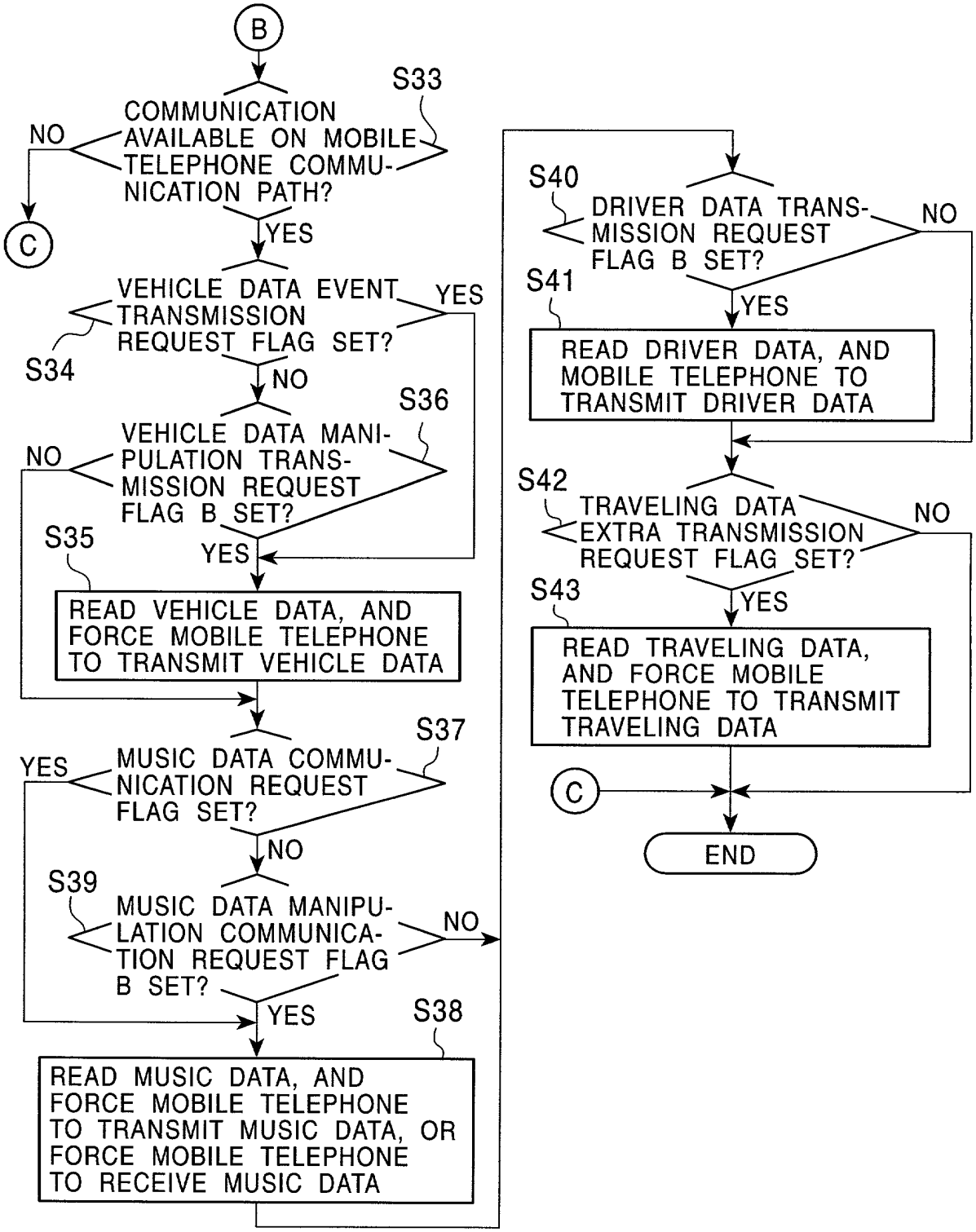

B
S33
COMMUNICATION AVAILABLE ON MOBILE TELEPHONE COMMU-NICATION PATH?
NO
C
YES
VEHICLE DATA EVENT TRANSMISSION REQUEST FLAG SET?
YES
S34
NO
S36
VEHICLE DATA MANI-PULATION TRANS-MISSION REQUEST FLAG B SET?
NO
S35
YES
READ VEHICLE DATA, AND FORCE MOBILE TELEPHONE TO TRANSMIT VEHICLE DATA
S37
YES
MUSIC DATA COMMU-NICATION REQUEST FLAG SET?
NO
S39
MUSIC DATA MANIPU-LATION COMMUNICA-TION REQUEST FLAG B SET?
NO
YES
S38
READ MUSIC DATA, AND FORCE MOBILE TELEPHONE TO TRANSMIT MUSIC DATA, OR FORCE MOBILE TELEPHONE TO RECEIVE MUSIC DATA
S40
DRIVER DATA TRANS-MISSION REQUEST FLAG B SET?
NO
S41
YES
READ DRIVER DATA, AND MOBILE TELEPHONE TO TRANSMIT DRIVER DATA
S42
TRAVELING DATA EXTRA TRANSMISSION REQUEST FLAG SET?
NO
S43
YES
READ TRAVELING DATA, AND FORCE MOBILE TELEPHONE TO TRANSMIT TRAVELING DATA
C
END

FIG. 12

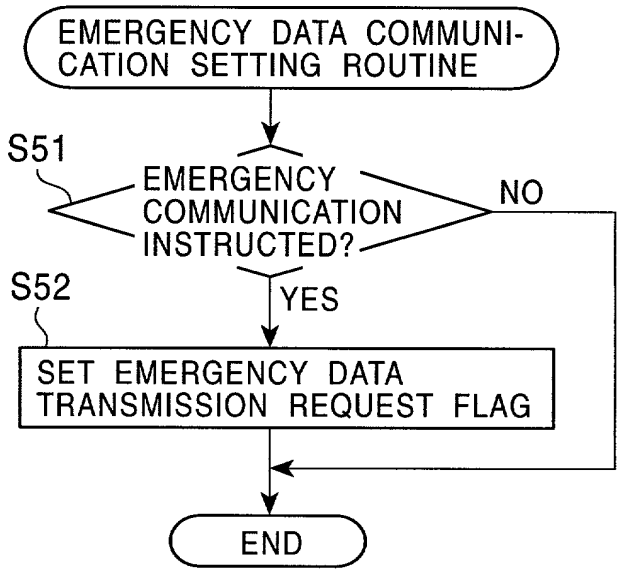

EMERGENCY DATA COMMUNI-
CATION SETTING ROUTINE
S51
EMERGENCY
COMMUNICATION
INSTRUCTED?
NO
YES
S52
SET EMERGENCY DATA
TRANSMISSION REQUEST FLAG
END

FIG. 13

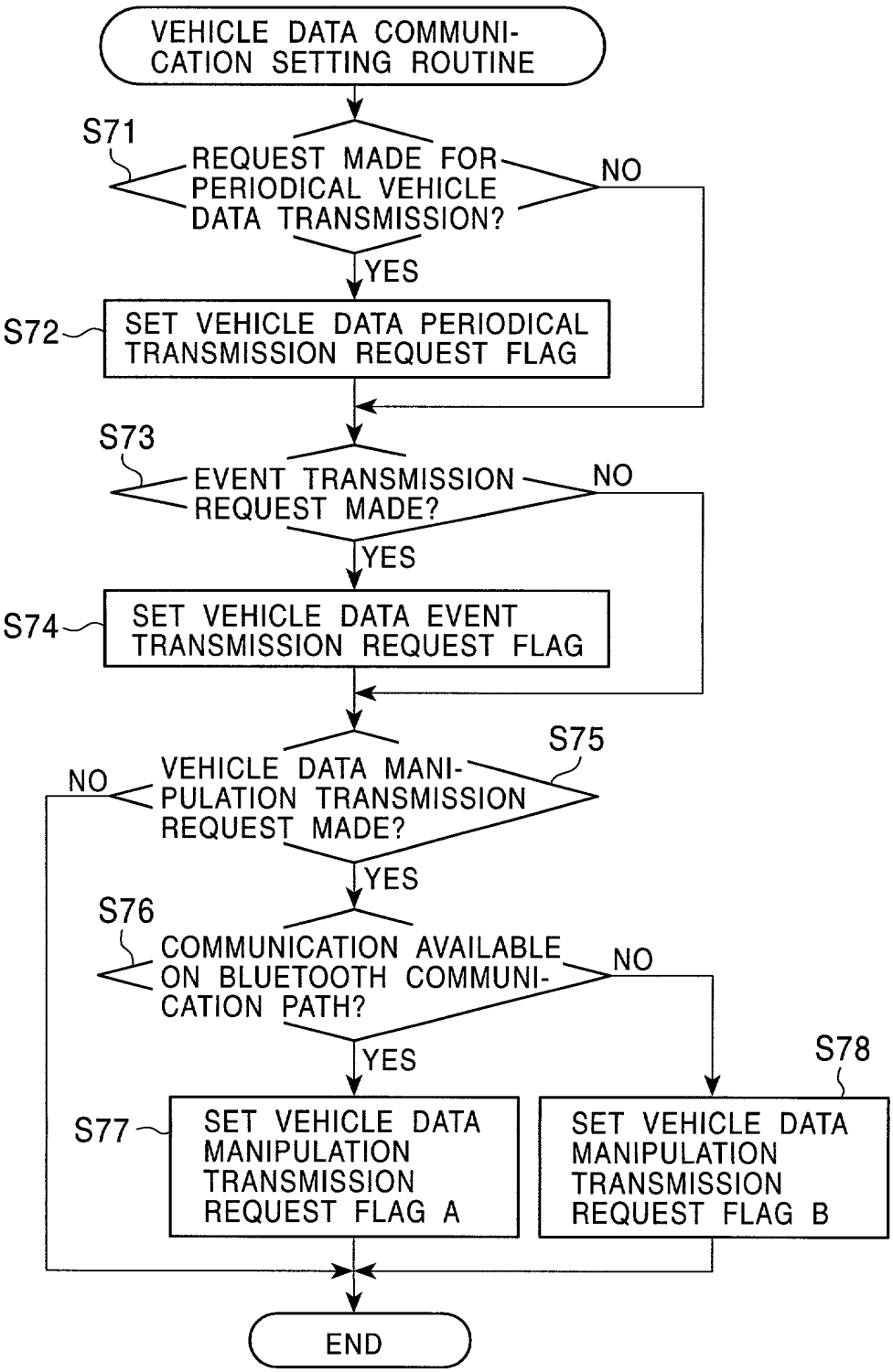

VEHICLE DATA COMMUNICATION SETTING ROUTINE
S71
REQUEST MADE FOR PERIODICAL VEHICLE DATA TRANSMISSION?
NO
YES
S72
SET VEHICLE DATA PERIODICAL TRANSMISSION REQUEST FLAG
S73
EVENT TRANSMISSION REQUEST MADE?
NO
YES
S74
SET VEHICLE DATA EVENT TRANSMISSION REQUEST FLAG
S75
VEHICLE DATA MANIPULATION TRANSMISSION REQUEST MADE?
NO
YES
S76
COMMUNICATION AVAILABLE ON BLUETOOTH COMMUNICATION PATH?
NO
YES
S77
SET VEHICLE DATA MANIPULATION TRANSMISSION REQUEST FLAG A
S78
SET VEHICLE DATA MANIPULATION TRANSMISSION REQUEST FLAG B
END

FIG. 14

TYPE	UPDATE CYCLE	PRECEDING UPDATE DATE AND TIME
VEHICLE DATA	ONE WEEK	XXXX : YY : ZZ 12:10
DRIVER DATA	START OF VEHICLE	XXXX : YY : ZZ 11:03
MUSIC DATA	TWICE A DAY	XXXX : YY : ZZ 12:00
MAP DATA	ONCE A MONTH	XXXX : YY : ZZ 09:45
TRAVELING DATA	EVERY 10 MINUTES	XXXX : YY : ZZ 12:50
ADDRESS BOOK DATA	ONCE A DAY	XXXX : YY : ZZ 10:10
EMERGENCY DATA	OCCURRENCE OF EMERGENCY	XXXX : AY : GH 17:30

FIG. 15

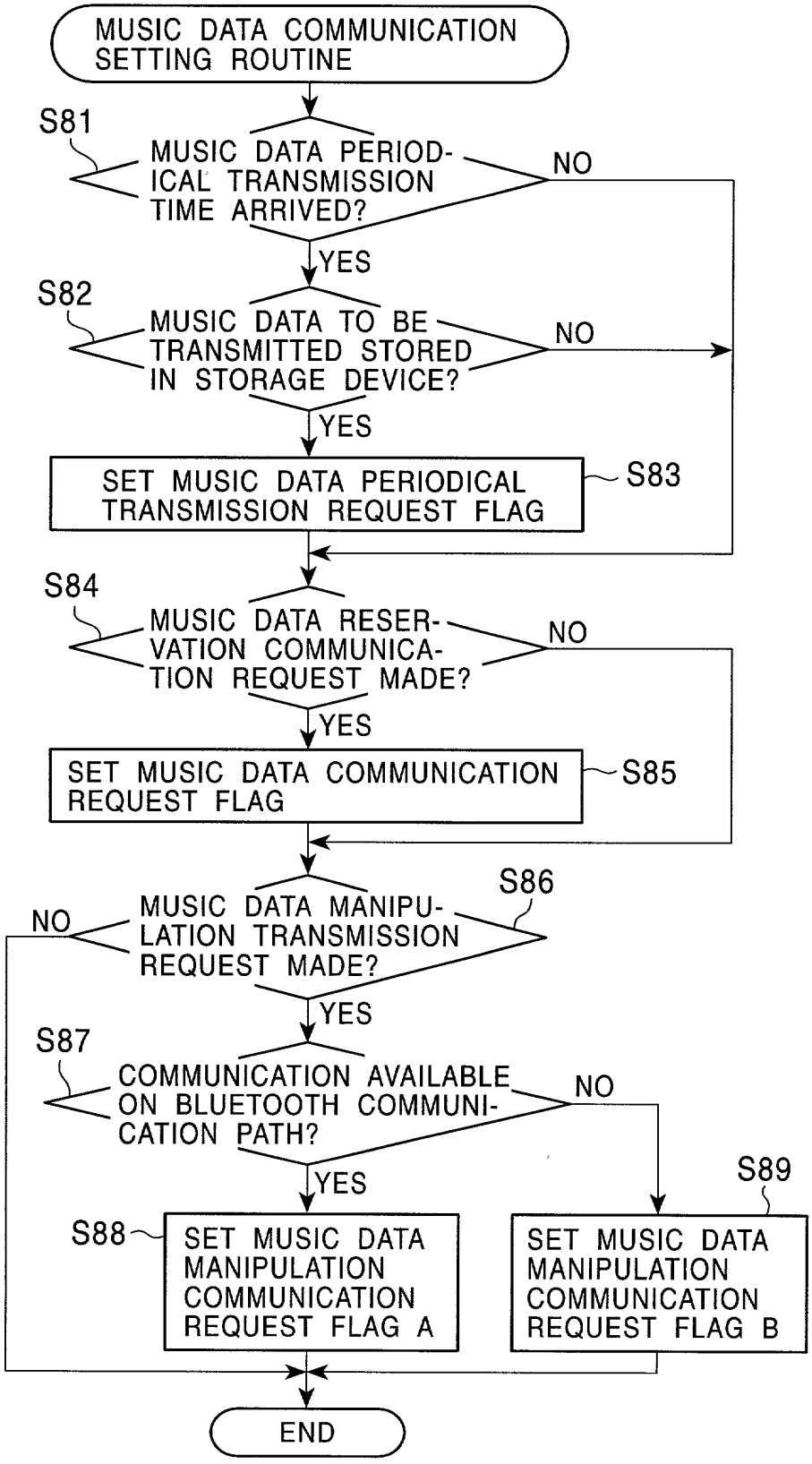

MUSIC DATA COMMUNICATION SETTING ROUTINE
S81
MUSIC DATA PERIODICAL TRANSMISSION TIME ARRIVED?
NO
YES
S82
MUSIC DATA TO BE TRANSMITTED STORED IN STORAGE DEVICE?
NO
YES
SET MUSIC DATA PERIODICAL TRANSMISSION REQUEST FLAG
S83
S84
MUSIC DATA RESERVATION COMMUNICATION REQUEST MADE?
NO
YES
SET MUSIC DATA COMMUNICATION REQUEST FLAG
S85
S86
MUSIC DATA MANIPULATION TRANSMISSION REQUEST MADE?
NO
YES
S87
COMMUNICATION AVAILABLE ON BLUETOOTH COMMUNICATION PATH?
NO
YES
S88
SET MUSIC DATA MANIPULATION COMMUNICATION REQUEST FLAG A
S89
SET MUSIC DATA MANIPULATION COMMUNICATION REQUEST FLAG B
END

FIG. 16

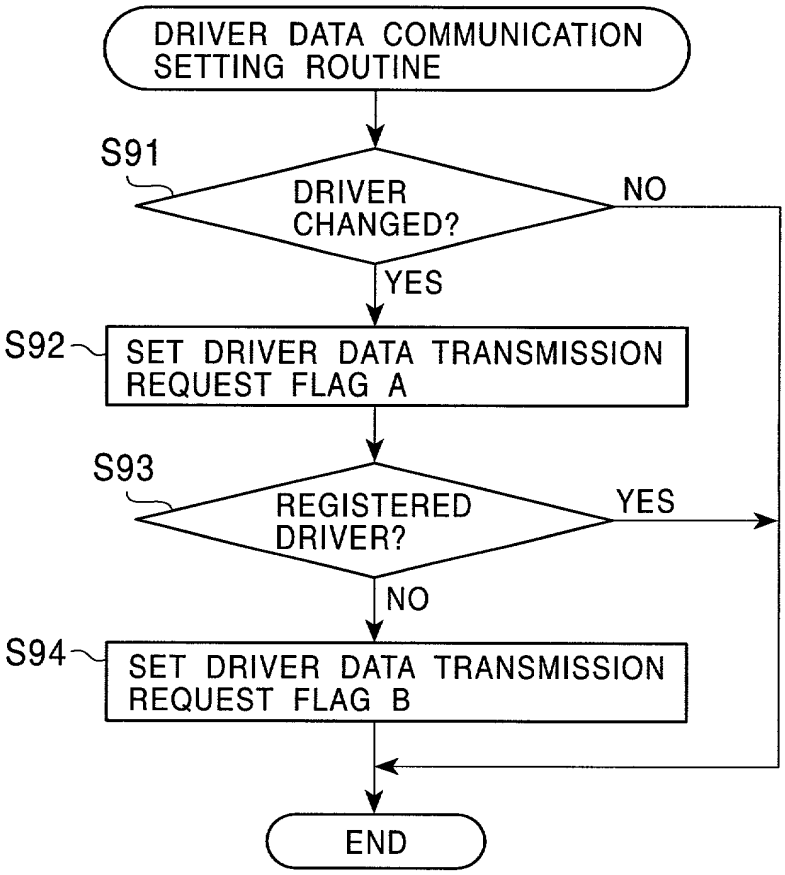

DRIVER DATA COMMUNICATION SETTING ROUTINE
S91
DRIVER CHANGED?
NO
YES
S92
SET DRIVER DATA TRANSMISSION REQUEST FLAG A
S93
REGISTERED DRIVER?
YES
NO
S94
SET DRIVER DATA TRANSMISSION REQUEST FLAG B
END

FIG. 17

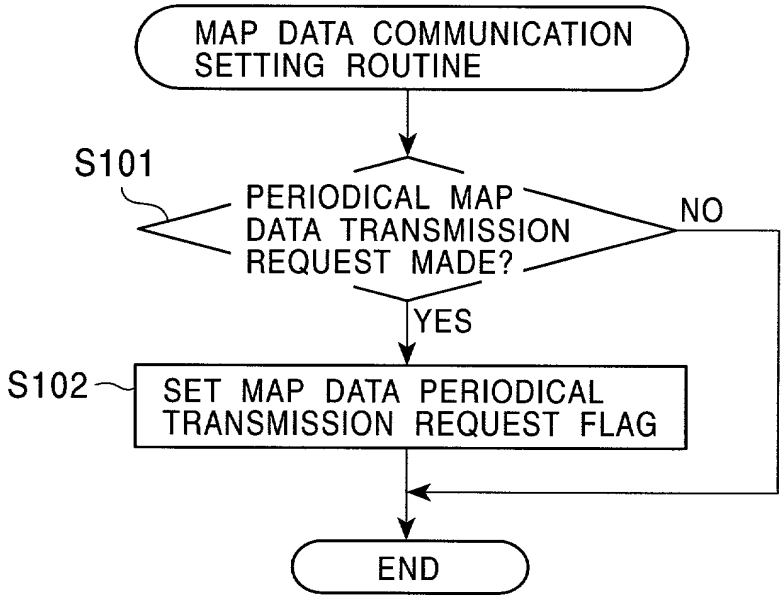

MAP DATA COMMUNICATION SETTING ROUTINE
S101
PERIODICAL MAP DATA TRANSMISSION REQUEST MADE?
NO
YES
S102
SET MAP DATA PERIODICAL TRANSMISSION REQUEST FLAG
END

FIG. 18

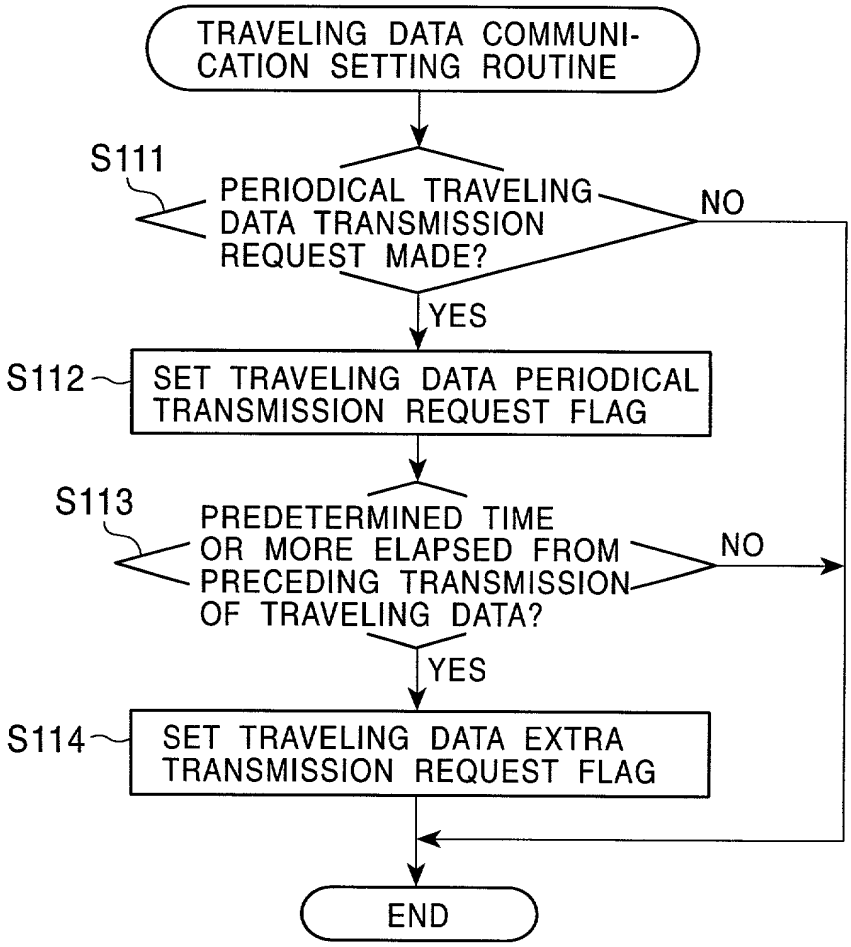

TRAVELING DATA COMMUNI-CATION SETTING ROUTINE
S111
PERIODICAL TRAVELING DATA TRANSMISSION REQUEST MADE?
NO
YES
S112
SET TRAVELING DATA PERIODICAL TRANSMISSION REQUEST FLAG
S113
PREDETERMINED TIME OR MORE ELAPSED FROM PRECEDING TRANSMISSION OF TRAVELING DATA?
NO
YES
S114
SET TRAVELING DATA EXTRA TRANSMISSION REQUEST FLAG
END

FIG. 19

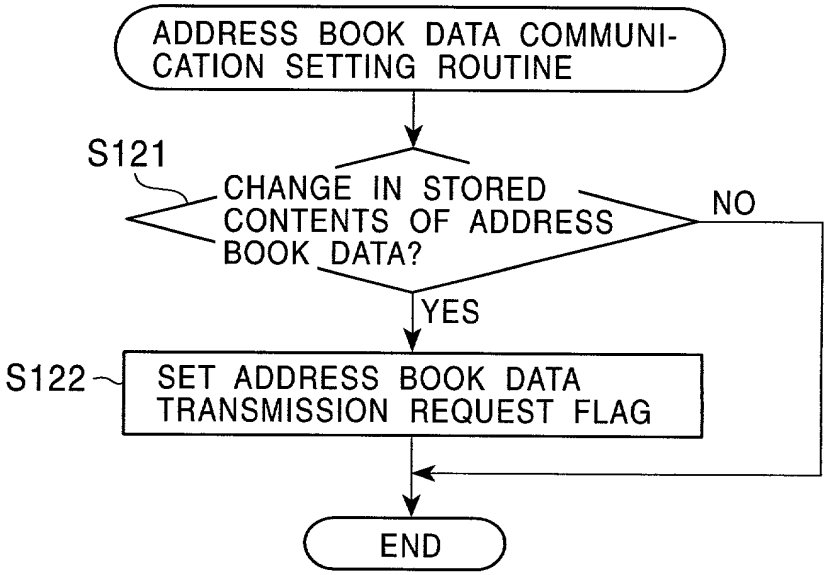


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FIG. 20

DEVICE OR SERVER / TYPE	VEHICLE MANAGEMENT CENTER DEVICE	TRAVELING MANAGEMENT CENTER DEVICE	HOME SERVER	OFFICE SERVER	MUSIC DELIVERY CENTER DEVICE	EMERGENCY MESSAGE CENTER DEVICE
VEHICLE DATA	○	○	○	○	×	○
DRIVER DATA	○	○	○	○	○	○
MUSIC DATA	×	×	○	○	○	×
MAP DATA	×	○	○	○	×	○
TRAVELING DATA	○	○	○	×	×	○
ADDRESS BOOK DATA	×	×	○	○	×	×
EMERGENCY DATA	×	×	○	×	×	○

FIG. 21

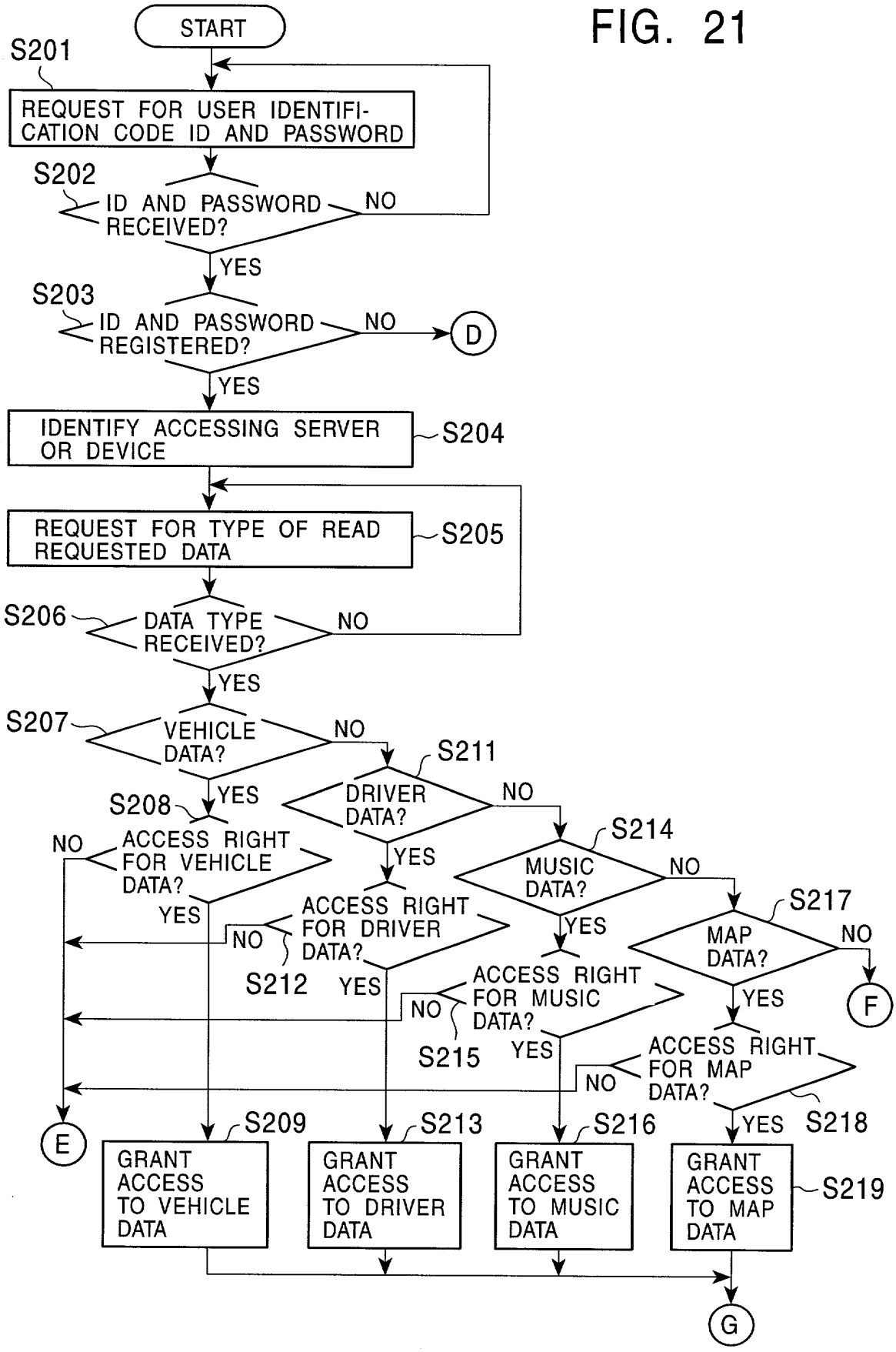
START
S201
REQUEST FOR USER IDENTIFICATION CODE ID AND PASSWORD
S202
ID AND PASSWORD RECEIVED?
NO
YES
S203
ID AND PASSWORD REGISTERED?
NO
D
YES
IDENTIFY ACCESSING SERVER OR DEVICE
S204
REQUEST FOR TYPE OF READ REQUESTED DATA
S205
S206
DATA TYPE RECEIVED?
NO
YES
S207
VEHICLE DATA?
NO
YES
S208
ACCESS RIGHT FOR VEHICLE DATA?
NO
YES
S211
DRIVER DATA?
NO
YES
ACCESS RIGHT FOR DRIVER DATA?
NO
YES
S212
S214
MUSIC DATA?
NO
YES
ACCESS RIGHT FOR MUSIC DATA?
NO
YES
S215
S217
MAP DATA?
NO
YES
F
ACCESS RIGHT FOR MAP DATA?
NO
YES
S218
E
S209
S213
S216
GRANT ACCESS TO VEHICLE DATA
GRANT ACCESS TO DRIVER DATA
GRANT ACCESS TO MUSIC DATA
GRANT ACCESS TO MAP DATA
S219
G

FIG. 22

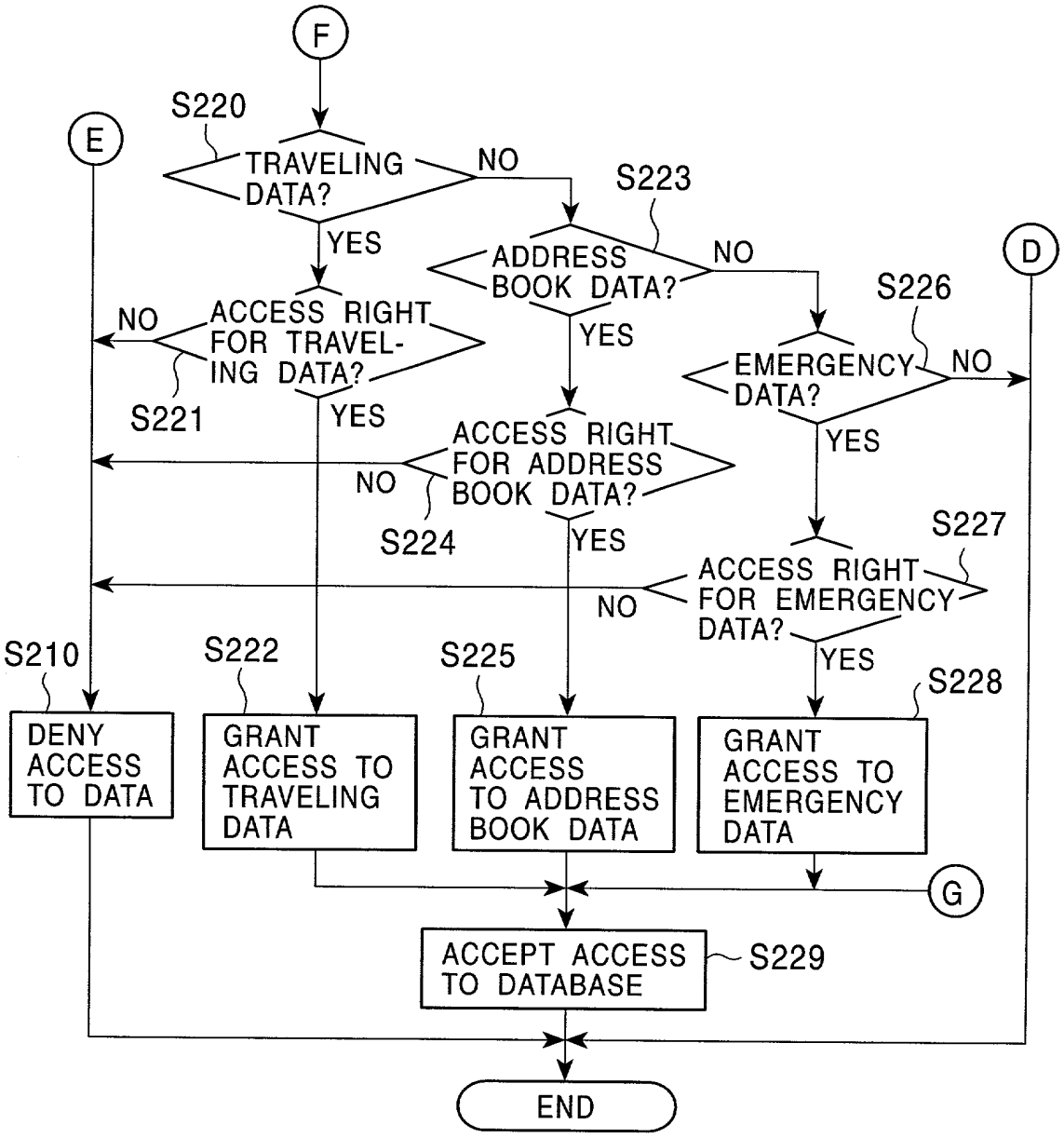
F
S220
TRAVELING DATA?
NO
YES
S223
ADDRESS BOOK DATA?
NO
YES
D
S226
EMERGENCY DATA?
NO
YES
E
NO
ACCESS RIGHT FOR TRAVEL-ING DATA?
S221
YES
ACCESS RIGHT FOR ADDRESS BOOK DATA?
NO
S224
YES
S227
ACCESS RIGHT FOR EMERGENCY DATA?
NO
YES
S210
S222
S225
S228
DENY ACCESS TO DATA
GRANT ACCESS TO TRAVELING DATA
GRANT ACCESS TO ADDRESS BOOK DATA
GRANT ACCESS TO EMERGENCY DATA
G
ACCEPT ACCESS TO DATABASE
S229
END

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FIG. 23

USER GROUP / TYPE	OWNER	FAMILY MEMBER	FRIEND	SECURITY COMPANY	POLICE	FIRE STATION	REPAIR SHOP
VEHICLE DATA	○	○	○	○	○	○	○
DRIVER DATA	○	○	○	○	×	○	×
MUSIC DATA	○	×	○	×	×	×	×
MAP DATA	○	○	○	○	○	×	×
TRAVELING DATA	○	○	×	×	×	×	○
ADDRESS BOOK DATA	○	×	×	×	×	×	×

FIG. 24

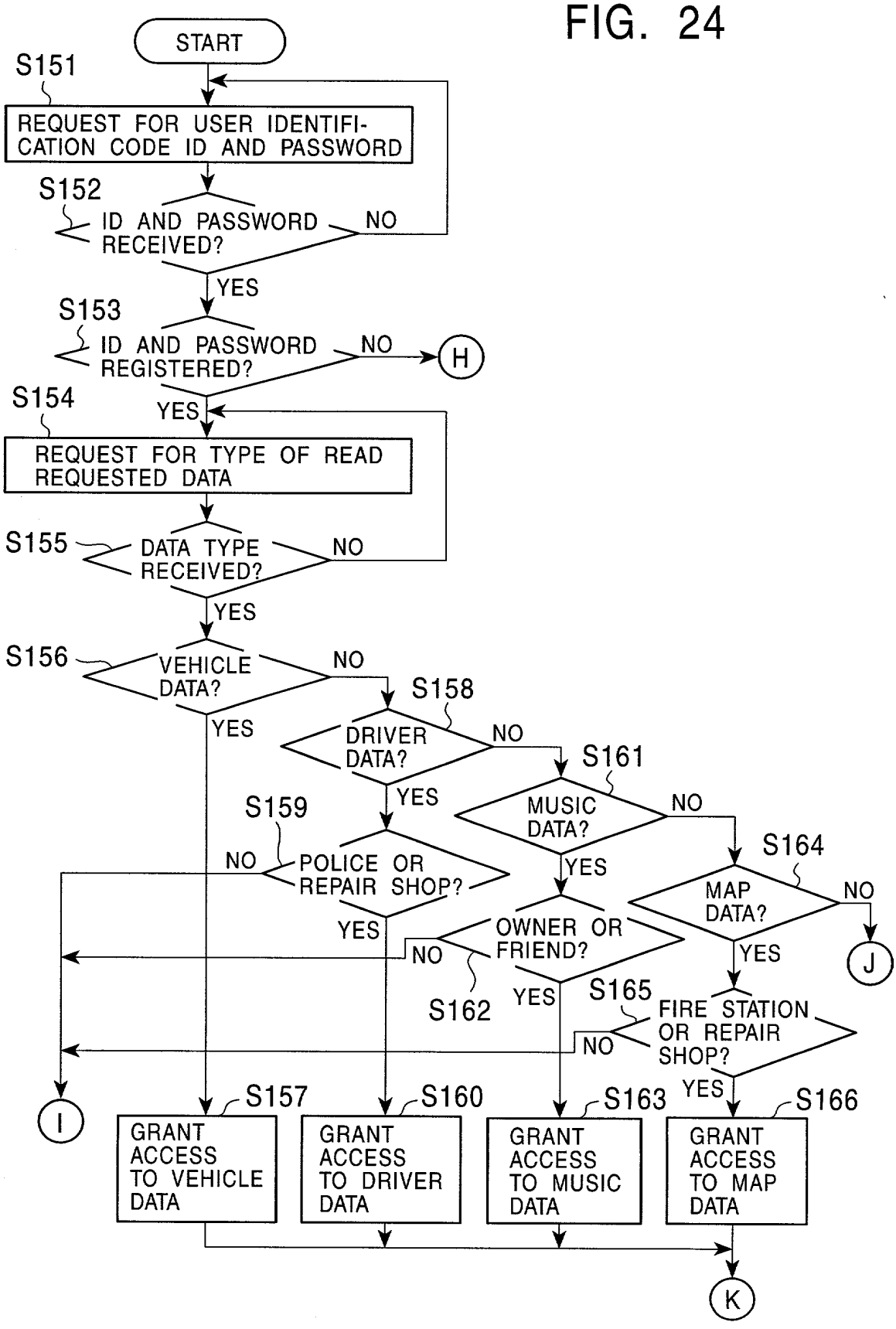
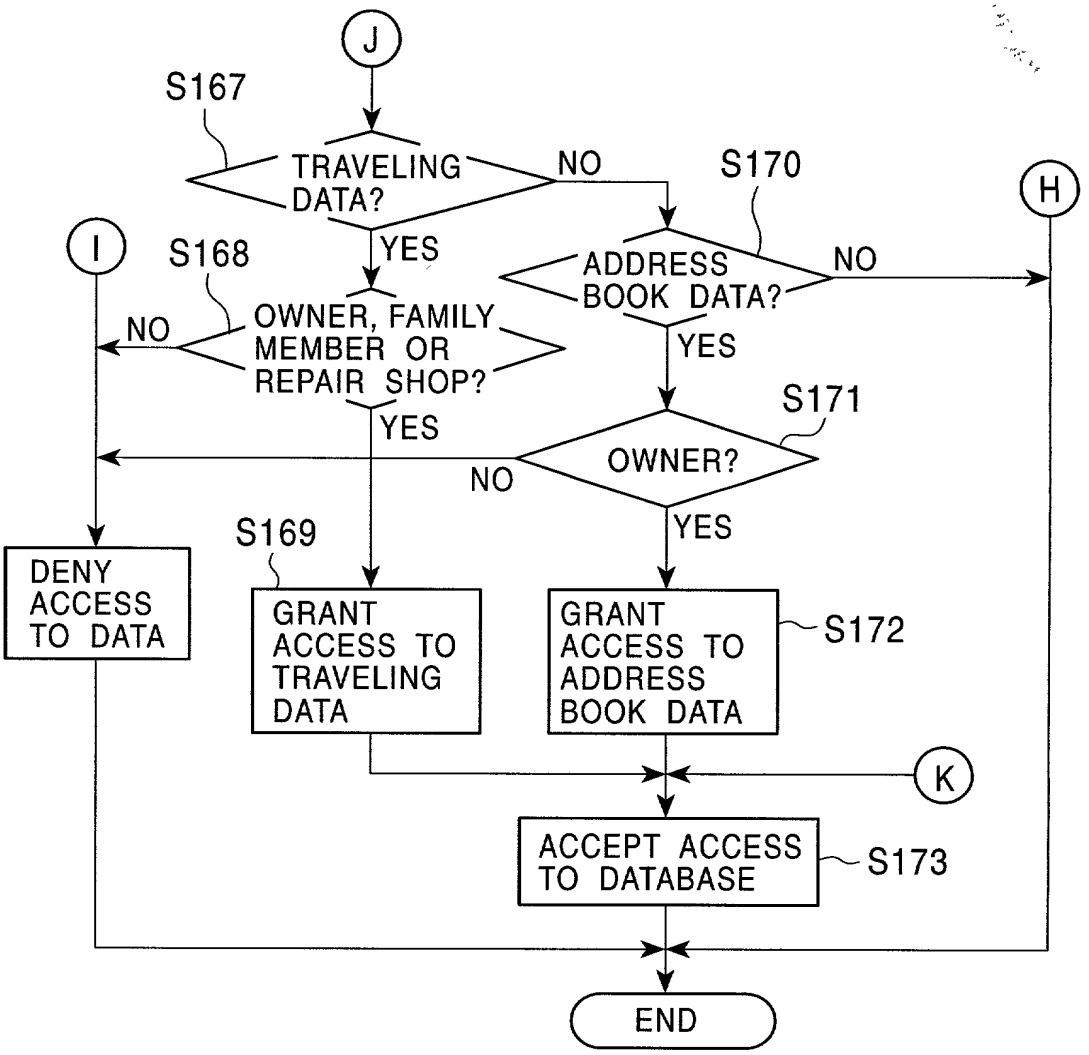

START
S151
REQUEST FOR USER IDENTIFICATION CODE ID AND PASSWORD
S152
ID AND PASSWORD RECEIVED?
NO
YES
S153
ID AND PASSWORD REGISTERED?
NO
H
S154
YES
REQUEST FOR TYPE OF READ REQUESTED DATA
S155
DATA TYPE RECEIVED?
NO
YES
S156
VEHICLE DATA?
NO
YES
S158
DRIVER DATA?
NO
YES
S159
POLICE OR REPAIR SHOP?
NO
YES
S161
MUSIC DATA?
NO
YES
S162
OWNER OR FRIEND?
NO
YES
S164
MAP DATA?
NO
YES
J
S165
FIRE STATION OR REPAIR SHOP?
NO
YES
I
S157
GRANT ACCESS TO VEHICLE DATA
S160
GRANT ACCESS TO DRIVER DATA
S163
GRANT ACCESS TO MUSIC DATA
S166
GRANT ACCESS TO MAP DATA
K

FIG. 25


J
S167
TRAVELING DATA?
NO
S170
H
I
S168
YES
ADDRESS BOOK DATA?
NO
NO
OWNER, FAMILY MEMBER OR REPAIR SHOP?
YES
S171
YES
OWNER?
NO
YES
S169
DENY ACCESS TO DATA
GRANT ACCESS TO TRAVELING DATA
GRANT ACCESS TO ADDRESS BOOK DATA
S172
K
ACCEPT ACCESS TO DATABASE
S173
END